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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,299	08/16/2005	David H. Levy	13159-023US1	2532
26161 7590 10/16/2007 FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER JEFFERS, BENJAMIN J	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/527,299	Applicant(s) LEVY, DAVID H.	
	Examiner Benjamin Jeffers	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 08 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-10,12,15,17,20-22,26-29 and 32-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10,12,15,17,20-22,26-29,32-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/15/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This application has been examined.

Claims 1-2, 4-10, 12, 15, 17, 20-22, 26-29, and 32-42 are presented for examination.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

1. The disclosure is objected to because of the following informalities:

Page 11, paragraph 3 regarding figure 7 makes reference to an item #46, while there is no #46 in Fig 7. The description matches that of what is labeled #48 in the drawing. This is a minor error and can be overcome with the appropriate correction.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. The term "many" as found in claims 2, 7, 12, 15, and 38 is a relative term, which renders the claim indefinite. The term "many" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one

of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4-8, 12, 15, 17, 27-29, 32-38, and 40-42 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 7265745 Kling.

In regards to claim 1, Kling teaches a keypad [Fig. 2] that has exposed keys of varying heights [Fig. 3B and related description], which can be termed hill keys and valley keys. The description paragraph of Fig. 3A states that the valley keys (dummy keys) may be differentiated from the other keys by having different sizes or shapes. While the pictured embodiment has a raised dummy key #309 in other iterations it may be more advantageous to have a lowered height to differentiate, such as in Fig. 4. The hill keys [#303 & #305 Fig. 3B] can be seen to have a nominal effective key width substantially equal to the nominal effective width of the valley key [#309 Fig. 3B].

Regarding claims 2 and 4, Kling further describes a keypad wherein at least some of the hill keys ['1A' Fig. 4] are associated with a corresponding hill key ['2C'] such that adjacent pairs of hill keys and connecting regions [#409] form elongated dual keys

[related figure description]. The connecting region [#409] is locally elevated (above the structure it is mounted on) and bridges the two hill keys together.

As it pertains to claims 5 and 6, Kling describes a keypad where the bridge between adjacent hill keys narrows. As seen in Fig. 4 the connection between the keys A and C is narrower than the keys themselves. In addition the description paragraph of Fig. 3A states that the bridge (which is also a dummy key) may be differentiated from the other keys by having different sizes or shapes, thus it can be shaped to form a waist and slope downward toward its midpoint to form a saddle between adjacent hill keys.

Regarding claim 7, Kling shows that the dual key comprising the two hill keys can be seen to have a left side ['1A' Fig.4] and a right side ['2C'] with different identifying labels.

In regards to claim 8, Kling teaches that the keys, including the dual keys, overlay electrical traces of a circuit board and are associated with conductive actuators [electrical contacts Fig. 3A discussion] on the keypad. It is inherent to the art that a keypad of this design would include a circuit board with electrical traces for completing the circuit made by pressing a key and thus the conductive actuator on each hill key.

Regarding claim 12, Kling teaches multiple iterations of the dual keys. In one iteration of the invention each hill key has its own electrical actuator [Fig. 3A discussion], thus each pair of hill keys (dual key) has a pair of actuators.

Pertaining to claim 15, Kling describes a keypad wherein the dual keys are each associated with a pair of tactile feedback elements [Fig. 3A discussion] through the differentiation in height, size, etc. of the dummy key and the hill keys.

In regards to claim 17, Kling teaches an iteration in which the dummy keys are mechanically connected to the two hill keys [adjacent keys, Fig. 3A discussion]. This makes a keypad wherein each dual key is a rigid key structure displaceable as a unit with respect to the underlying circuit board.

Regarding claims 27, 28, and 29 Kling teaches in the description paragraph of Fig. 3A that the valley keys (dummy keys) may be differentiated from the other keys by having different sizes or shapes. Thus these keys may be convex in shape and above the keypad surface but shorter than the surrounding Hill keys. Kling does not give an exact measurement as to the spacing between adjacent valley keys, thus it is interpreted as any width within reason of the invention. Since Kling's invention is specifically for conserving space it can be seen that a distance between valley keys being less than about six millimeters is reasonable.

In regards to claim 32, Kling describes an iteration of the invention wherein the keypad is arranged in a QWERTY keyboard layout [Fig. 5].

Regarding claims 33, 34, 35, 36, and 37, Kling teaches a system wherein the hill keys [Fig. 2 'A, C, E,' etc.] provide a corresponding output when individually pressed, and wherein the valley keys [Fig. 3 'dummy keys' and Fig. 2 'B, D,' etc.] are labeled to correspond with an output that results at least from the simultaneous or near simultaneous manipulation of a predetermined set of two or more hill keys adjacent to the valley key [Fig. 2 and 3 explanations]. One of the iterations of the invention has only the hill keys providing electrical output, the valley (dummy) keys only being keys in shape, not providing any electronic signal separate from the associated adjacent hill

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keys [Fig. 3 description]. Instead of having a separate output for the valley keys Kling teaches algorithmically associating the valley output with the combined activation of adjacent switches ['keys' Fig. 3 discussion]. The combination of hill keys provide an output that overrides the output of the individual hill key presses when activated simultaneously (or near-simultaneously), in order for the system to work [Fig. 3 description].

Pertaining to claim 38, Kling teaches a keypad [Fig. 2] that has exposed keys of varying heights [Fig. 3B and related description], which can be termed hill keys and valley keys. The description paragraph of Fig. 3A states that the valley keys (dummy keys) may be differentiated from the other keys by having different sizes or shapes. While the pictured embodiment has a raised dummy key #309 in other iterations it may be more advantageous to have a lowered height to differentiate, such as in Fig. 4. The hill keys are associated with a corresponding hill key, with adjacent pairs of hill keys ['1A' and '2C' Fig. 4] and connecting regions [Fig. 4 #409] of the keypad forming elongated dual keys.

Regarding claim 40, Kling teaches in the description paragraph of Fig. 3A that the valley key (dummy key) may be differentiated from the other keys by having different sizes or shapes, thus it can be convex.

In regards to claim 41, Kling teaches a keypad [Fig. 2] that has exposed keys of varying heights [Fig. 3B and related description]. The description paragraph of Fig. 3A states that the valley keys (dummy keys) may be differentiated from the other keys by

having different sizes or shapes. This includes being elevated above the surface of the keypad but recessed with respect to the hill keys.

As it pertains to claim 42, Kling teaches a system wherein the hill keys [Fig. 2 'A, C, E,' etc.] provide a corresponding output when individually pressed, and wherein the valley keys [Fig. 3 'dummy keys' and Fig. 2 'B, D,' etc.] are labeled to correspond with an output that results at least from the simultaneous or near simultaneous manipulation of a predetermined set of two or more hill keys adjacent to the valley key [Fig. 2 and 3 explanations].

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kling as applied to claim 8 above, and further in view of obviousness.

Regarding claims 9 and 10, Kling does not teach only associating each dual key with only one, elongated actuator. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have one elongated actuator for each dual key. Since the dual key can be a single solid piece it is an engineering design choice whether to have actuators for each hill key or to share an

elongated actuator with a lower surface curved along its length. This would be obvious to one of ordinary skill in the art without undue testing.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kling as applied to claim 17 above, and further in view of US Patent 5861588, Gillot. Kling does not teach alternating a row of dual keys with a row of valley keys.

Gillot does teach a keypad with two key types, S keys and P keys that alternate rows [Fig. 8 and related description]. In this iteration, P keys cause the actuation of associated S keys [Fig. 5A] thus P keys can be considered to be functionally equivalent to valley keys and S keys to hill keys. Gillot further teaches that the keys may be of any size or shape [Fig. 8 description].

Since Gillot teaches a flat key surface, the incorporation of Kling's varying heights and shapes of keys would add a tactile response to the user. This would be advantageous to increasing the ease of use of a keyboard of the small sizes of these inventions. Thus it would have been obvious to someone of ordinary skill in the art at the time the invention was made to combine Kling and Gillot.

9. Claims 21, 22, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kling and further in view of US Patent 5793312, Tsubai.

Regarding claims 21, 22, and 39 Kling teaches having valley (dummy) keys. Kling does not teach structurally linking the valley keys so that the downward displacement of one key leads to the upward displacement of an associated key.

Tsubai does teach a system of two keys [Fig. 7 #159 & #160] wherein the two keys are structurally linked such that displacing one of the keys towards the circuit board displaces the other key away from the circuit board [Fig. 7 and description]. Tsubai also teaches this system to be a lever spanning the pair of keys [Fig. 7 #37] and pivotable about a pivot point [Fig. 7 #31] between the spanned keys.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kling and Tsubai. The key system of Kling allows for more keys in less space than conventional methods, while replacing the valley (dummy) keys of Kling with the keys described by Tsubai would make it easier for the user to determine what key was pressed when activating one of the valley keys. This is an advantage to have tactile responses to key actuation when in such a small keypad environment.

10. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kling and further in view of US Patent 6961052, Vaziri.

In regards to claim 26, Kling does teach the valley keys and hill keys as discussed in previous claims. Kling does not teach the keypad further comprising pivotable members.

Vaziri does teach a pivotable member [Fig. 3 #20] which spans at least two keys [40-1 & 40-3]. Due to the structure of the key, moving the key directly toward the circuit board would actuate all of the underlying keys, while pressing towards the keyboard on any of the sides of the key would actuate one of the side keys. Thus the middle of the key can be considered the valley key (it is also sloped downward), while two sides of

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the key can be the hill keys (higher than the valley keys and each have an individual electronic actuator while the valley keys would be associated with the activation of multiple hill keys). Displacing one of the hill keys toward the underlying circuit board displaces the other of the spanned hill keys away from the circuit board [Fig. 3 #44].

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kling and Vaziri. The response from raising a non-pressed key nearby but not associated with the pressed key as in Vaziri would add to the tactile response of Kling. This is advantageous to the user for giving a tactile clue for when a key is pressed in such a small environment.

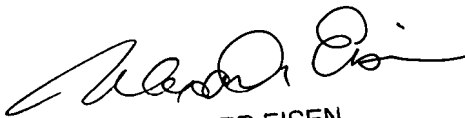
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin Jeffers whose telephone number is 571-272-1455. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10/10/2007


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